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IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF HAWAI'I

‘ĪLIO‘ULAOKALANI COALITION, a )	Civil No. 04-00502 DAE BMK
Hawai'i nonprofit corporation; NĀ ‘IMI )	
PONO, a Hawai'i unincorporated )	DECLARATION OF ANDREW P.
association; and KĪPUKA, a Hawai'i )	HOOD; EXHIBITS “57” – “62”
unincorporated association, )	
)	
Plaintiffs, )	
)	
v. )	
)	
DONALD H. RUMSFELD, Secretary of )	
Defense; and FRANCIS J. HARVEY, )	
Secretary of the United States )	
Department of the Army, )	
)	
Defendants. )	
)	
)	

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**DECLARATION OF ANDREW P. HOOD**

I, ANDREW P. HOOD, declare under penalty of perjury that:

1. I have seventeen years of field and research experience as a hydrologist, with expertise in surface and groundwater hydrology, water resources engineering, fluvial geomorphology, and erosion control.

2. I received a Bachelor of Science degree in Watershed Hydrology, with a minor in soil science, from the University of Arizona in 1992, and a Master of Science degree in Civil and Environmental Engineering, with a focus on Water Resource Engineering, from Utah State University in 1999.

3. I have worked as a hydrologist for the U.S. Forest Service, a research engineer for the Department of Civil and Environmental Engineering at Utah State University, and a hydrologist/environmental Engineer in the private sector. I am currently a principal with Sustainable Resources Group Intn'l, Inc. ("SRGII"), a Hawai'i-based consulting firm specializing in environmental management and water resources engineering.

4. In the course of my professional career, I have carried out a wide range of projects including conducting watershed analyses, designing and implementing stream channel and wetland restoration, wetland delineation, conducting geomorphological studies, assessing instream flow issues and modeling instream flow hydraulics, conducting water quality analysis, and developing Best

Management Practices (“BMPs”) and establishing methodologies to monitor their implementation and effectiveness. I have developed erosion control plans for, among others, Marine Corps Base Hawai‘i, the Payette National Forest, the Sawtooth National Forest, various private landowners, and the U.S. Environmental Protection Agency.

5. My *curriculum vitae*, a true and correct copy of which is attached hereto as Exhibit “57,” contains a detailed description of my professional education and experience, including peer-reviewed publications and professional presentations.

6. I have reviewed sections of the Army’s Final Environmental Impact Statement (“EIS”) for converting the 2<sup>nd</sup> Brigade of the 25<sup>th</sup> Infantry Division into a Stryker brigade in Hawai‘i, descriptions of the Army’s proposed Stryker-related training in various documents the Army has provided in connection with this litigation, and the Army’s Integrated Natural Resource Management Plan for training areas on O‘ahu. I also participated, on November 30 and December 1, 2006, in site visits to areas on O‘ahu where the Army proposes to conduct Stryker-related activities, including areas at Kahuku Training Area (“KTA”) and Schofield Barracks East Range (“East Range”) where the Army seeks to perform on- and off-road maneuvers with Stryker vehicles; at Wheeler Army Airfield, where the

Multiple Deployment Facility (“MDF”) is under construction; and in the South Range Acquisition Area, where the Schofield Barracks Motor Pool is under construction.

7. Based on my background and experience, it is my opinion that, due to the absence of adequate BMPs, allowing the Army to proceed with Stryker maneuvers and drivers training on the roads and off-road maneuver areas at KTA and East Range would cause environmental damage above and beyond that associated with non-Stryker exercises, due to both irreparable soil loss and the discharge of polluted stormwater to streams that discharge into receiving water bodies that already exceed acceptable levels of turbidity. In addition, allowing the Army to pave the proposed parking areas at the Motor Pool would cause damage to the channel of the receiving stream and pollute downstream receiving waters with high flow volumes of polluted runoff. Finally, unless the Army is required to properly install adequate BMPs at the MDF, continued construction and subsequent operation of that facility will harm water quality. I describe my opinions in greater detail below.

#### **Maneuver Training At East Range and KTA**

8. The dirt roads and designated off-road maneuver areas on the East Range and KTA presently lack adequate BMPs to prevent negative environmental

impacts of soil erosion and stormwater runoff containing non-source point pollutants from proposed drivers training and other maneuver training with 19-20 ton Stryker vehicles. According to the EIS, training with Stryker vehicles would increase “maneuver impact miles” (“MIMs”) at East Range from a pre-Stryker level of 11,680 MIMs to 19,145 MIMs, an increase of over 60%. At KTA, the increase in usage would be even greater, with MIMs increasing from 7,210 pre-Stryker to 13,770, an increase of over 90%.

9. During the site visits to the East Range and KTA, the Army’s representatives identified areas the 2<sup>nd</sup> Brigade proposes to use for Stryker maneuver training and stated that, prior to entry of the current injunction on October 27, 2006, some Stryker maneuver training had already taken place. My examination of these areas revealed extensive erosion along the existing road networks, with exposed organic and mineral soils, active head cutting within some of the roadway ditches, gullying at the intersection of some of the roads and stream courses, and rills and gullies in areas where, I was told, Strykers had been driving up until the entry of the injunction at the end of October 2006. Attached hereto as Exhibit “58” is a true and correct copy of a photograph I took on November 30, 2006 from one of the East Range roads that accurately depicts a four-foot head cut discharging sediment into a receiving stream. Attached hereto as Exhibit “59” is a

true and correct copy of a photograph I took on November 30, 2006 that accurately depicts erosion of fill material along the shoulder of an East Range road above a receiving stream.

10. There were no meaningful BMPs installed on the road network at KTA, and the few BMPs I observed on roads at East Range were either improperly installed, inadequately sized, or inadequate in number to control erosion and runoff. For example, there were several broad-based dips to convey water from the upgrade-side to the downgrade-side of the road, where there was head-cutting up in the ditch system. In several other locations, the road surface itself had failed, with displacement marks from the wheeled vehicles. There were inset ditches along the road that were actively down-cut, and I could see signs of recent sediment scouring and transport. Moreover, at three or more locations where the road crossed either actively flowing stream courses or ephemeral streams where there was no water at the time we were there, I observed there were no velocity breakers or other types of erosion control to arrest the flow in the kickouts where the water was being concentrated, creating significant gullying where ditches conveyed water directly into the stream itself.

11. Like the road networks, the areas the Army proposes for off-road maneuvers at East Range and KTA already have exposed soils, with active,



accelerated erosion from current levels of use. Yet, no BMPs were in place to mitigate sediment runoff from these areas. That such extensive erosion is evident from existing use only emphasizes the risks to the environment from the vastly more extensive Stryker-related training the Army seeks leave to conduct.

12. If allowed to proceed, the substantial increase in use associated with maneuver training and drivers training with Stryker vehicles would greatly increase and accelerate soil erosion by removing protective ground cover which will increase soil vulnerability to detachment and increase overland flows. The study set forth in Appendix M-2 of the EIS concludes that, with Stryker training, land condition at East Range and KTA would degrade from its current borderline mild/moderate condition to severe, a conclusion with which I concur.

13. The increased erosion associated with the proposed Stryker training at East Range and KTA would cause significant harm in the form of soil loss that, for all practical purposes, is irreparable, since the tons of lost soil could be replaced only in geologic time. Stryker maneuver training at East Range and KTA would also generate sediment-polluted runoff that would harm water quality in the streams that flow through these ranges and the water bodies into which they flow. In East Range, Stryker-generated pollution would flow through the stream courses into either Waikele Stream or Kaiaka Bay, both of which are listed as impaired

waters for turbidity under the federal Clean Water Act § 303(d), with Kaiaka Bay also listed as impaired for suspended solids. At KTA, polluted runoff would reach Kawela Bay, which is listed on Hawai'i's 303(d) list as impaired for turbidity.

14. The aforementioned environmental degradation could be avoided only if, prior to conducting Stryker maneuvers, the Army first addresses the current lack of adequate BMPs for the roads and off-road maneuver areas at East Range and KTA. While preparing a comprehensive erosion control plan for these ranges would require more time than is currently available to me, it would be possible to develop such a plan, which, if implemented, could avoid the significant adverse environmental harm that would otherwise result from Stryker training under current conditions.

#### **Schofield Barracks Motor Pool**

15. The Army's proposal to complete construction of, and then to operate, the Schofield Barracks Motor Pool also threatens serious environmental harm. The EIS indicates that, when completed, the Motor Pool would include approximately thirty-four acres of paved parking areas. Attached hereto as Exhibit "60" is a true and correct copy of a photograph I took on November 30, 2006, that accurately depicts a portion of the proposed Motor Pool parking area. Creating this large, impervious surface would significantly increase stormwater runoff from the Motor



Pool area, and the Army's construction plans lack adequate BMPs to prevent this substantial alteration to the stormwater flow regime.

16. Due to the lack of an adequate stormwater management system, the creation of thirty-four acres of hardened parking surface will cause rapid discharges of high volumes of water into the neighboring natural stream channels. These stream channels did not evolve to handle such flashy, high-volume run-off events, which would not occur if rain water were allowed to percolate into the soil. The flash flooding resulting from paving the Motor Pool will severely degrade the stream ecosystems by increasing runoff volume, causing erosion of stream banks which will result in sediment pollution in the streams and the water bodies into which they flow.

17. Moreover, use of the Motor Pool by the more than 1,000 vehicles associated with the Stryker brigade would invariably produce pollutants such as dirt and mud, oil and grease, and tire wear, which will remain on the paved parking surfaces, ready to be mobilized and transported during rain events. The flashy stormwater flows described would wash this pollution directly into neighboring streams, contaminating them and the downstream waters into which they flow. These adverse impacts on water quality are inevitable, since the Army's construction plans – contrary to the standard practice for such projects – fail to

provide any mechanism to capture and separate the pollutants from the stormwater flows.

18. Contrary to the environmental harm associated with paving over the Motor Pool area, in its current unfinished state, the Motor Pool does not appear to pose significant erosion concerns. Most of the proposed parking areas are now graveled, which allows rainfall to percolate into the ground, avoiding flashy rainfall events. Even where the proposed parking areas are still dirt, the generally gentle grade of the area does not lend the area to significant erosion, and my inspection revealed no signs of such erosion. Moreover, the silt fences currently encircling the construction site should contain on-site any minor erosion that might result from stormwater flows in the area's current state. Completing construction of the Motor Pool threatens far more substantial environmental damage through concentrated stormwater runoff and pollution, as explained above.

19. Even if the Army were allowed to park vehicles in the Motor Pool area, it would be environmentally preferable to park them on the compacted soils and gravel of the unfinished Motor Pool, rather than on the hardened surfaces the Army proposes. While some of the pollutants inherently associated with parking vehicles might get through the gravel and onto the soil, it would be feasible to remediate any resulting contamination. In contrast, if the Army were allowed to

harden the parking surfaces, those same pollutants would rapidly mobilize to neighboring streams, and it would be all but impossible to get the contamination out of the environment. If vehicles must be parked at the Motor Pool site, the environmentally preferred option would be to park them at the site in its current condition.

20. Finally, if construction of the Motor Pool were allowed to proceed, the Court should insist that, prior to paving or using the parking areas, the Army implement the BMPs required to mitigate the negative impacts that would otherwise result. Based on my examination of this area, minimally prudent BMPs should include an oil-water separator and other ways to capture nonpoint source pollutants. In addition, the Army should be required to install detention basins to slow the release of stormwater to the watershed, protecting the integrity of neighboring stream channels.

#### **Inadequacy of BMPs at MDF**

21. My examination of the MDF compounded my concerns about the overall effectiveness of the Army's BMPs, as the few stormwater BMPs present were improperly installed and visibly failing. For example, there were a series of what were supposed to be sediment detention basins along the west side of the facility, but they were improperly designed to perform their intended function of

slowing down flows and capturing sediments and other pollutants. Since the invert of the basin was at nearly the same elevation as the outlet culverts, water flowing into the basin would simply flow through the detention basin without the lag time necessary to filter out sediments and other nonpoint source pollutants. Before any use of the MDF is authorized, these detention basins must be modified to be made functional. Otherwise, nonpoint source pollutants generated by deploying vehicles, ammunition, and soldiers will flow unhindered through the outflow into the adjacent stream.

22. In addition to the shortcomings of the detention basins, my inspection revealed extensive recent erosion – due entirely to the Army’s failure to implement adequate BMPs – that had occurred at numerous points where culverts drained flows from the MDF into natural stream channels.

23. Just to the east of the MDF, the Army had installed silt fences at a swale that conveys sheet flow from the road to the MDF, capturing it in an earthen lined ditch which then drops into the natural stream course. Because the Army improperly tried to use the silt fences to control concentrated flows, instead of the diffuse sheet flows that they are designed to handle, there was a significant head cut occurring right at the toe of the swale, which is causing polluted runoff to flow into the stream. Attached hereto as Exhibit “61” is a true and correct copy of a

photograph I took on November 30, 2006, which accurately depicts this significant head cut. A far more effective BMP would be to install wattles and other devices to filter sediments and other pollutants and slow the velocity of the water flowing in the swale. The Army should also modify their swale using a modified French drain or Dutch drain system to help convey water from the upgrade to the downgrade side.

24. Nearby, I saw substantial erosion occurring along an exposed scarp face to the immediate east of the MDF. While the scarp's erosion did not appear to be directly related to the MDF's construction, the stockpiling of excess dirt from the MDF at the foot of the scarp is a source of sediment that is eroding and transported as polluted runoff in stormwater. The Army's representative told me the MDF contractor had been directed to place dirt from MDF construction at the scarp's foot to protect a cultural site – Maunauna – threatened by the cliff's erosion. Given the height of the scarp, stockpiling the relatively small amount of spoils from the MDF will do nothing to protect Maunauna. Instead, because of the Army's failure to install adequate BMPs, the fill material is actively eroding down into the natural drainage, polluting the stream that runs by the MDF. Attached hereto as Exhibit "62" is a true and correct copy of a photograph I took on November 30, 2006, which accurately depicts this area.

25. The lack of adequate BMPs at the MDF is consistent with the deficiencies I observed throughout my site visit, reflecting the Army's contractors' lack of a basic understanding of where and how to install BMPs. Unless these deficiencies are addressed, construction and operation of the MDF will cause substantial environmental harm.

I declare under penalty of perjury that the forgoing is true and correct to the best of my knowledge, information, and belief.

Dated at Kailua, Hawai'i, December 13, 2006.

  
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ANDREW P. HOOD